BECHUANALAND PROTECTORATE

ANNUAL MEDICAL AND SANITARY REPORT

1946

SECTION 1 - ADMINISTRATION

STAFF:

1. The authorised establishment of Medical Officers is still two below that of 1939. Two additional temporary posts were made available during the year under an interim Colonial Development and Welfare Fund Scheme for the expansion of the Medical Department. But as Government has taken over the responsibility for medical services in the Ngamiland and Chobe district and the minimal establishment for the efficient running of this district is two Medical Officers, the effective establishment is still two Medical Officers below pre-war level.

2. Two Medical Officers joined the Service on appointment from the United Kingdom and two Medical Officers joined locally from the Union of South Africa, one of whom resigned and left the Service towards the end of the year. But as two Medical Officers had resigned in the last quarter of 1945, the Medical Officers appointed during the year merely brought the establishment up to the authorised level.

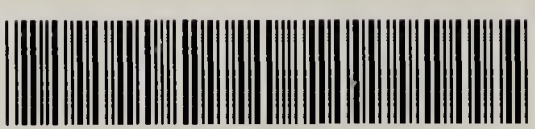
3. The vacant post of Assistant Medical Officer which has been on the estimates for a number of years but which it has not been possible to fill, was filled by the appointment of an African Doctor during October 1946. This Assistant Medical Officer holds the degree of M.B., Ch.B., of the Witwatersrand University. He is the first African Doctor to be appointed to the Bechuanaland Protectorate Medical Service.

4. The personnel of the European Nursing Service was continually changing throughout the year and it has not been possible to get permanent replacements. The establishment has been maintained as far as possible by the employment of locum tenens nursing sisters.

5. The establishment of Health Inspectors was raised to three during the year. One Health Inspector resigned and three appointments were made.

6. The African Senior Health Assistant went on leave at the end of December 1946 pending resignation. He has been in charge of the Tsau Health Centre since it was opened in November 1944.

7. The restrictions on overseas leave having been withdrawn one Medical Officer proceeded to the United Kingdom on long leave during the year. The requirements of leave taken locally were met as far as was possible despite the shortage of staff. When available, temporary assistance was engaged on a locum tenens basis to facilitate leave and ease the burden on the depleted district staff.



8. Mrs. P. G. Wilson, Matron of the Lobatsi hospital was awarded the M.B.E. in the 1946 New Year Honours List.

LEGISLATION.

9. The following legislation was enacted during the year:

High Commissioner's Notice 218 of 25.9.1946, amending the Bechuanaland Protectorate Sanitary Regulations (High Commissioner's Notice 116 of 1934) by applying its provisions to the local area of Francistown within a radius of two miles from the Railway Station.

High Commissioner's Notice No. 173 of 6.8.1946, amending the Medical Service Regulations (High Commissioner's Notice 54 of 1930) to provide for charges for x-ray examinations.

High Commissioner's Notice No.154 of 17.7.1946 amending the Sanitary Regulations (High Commissioner's Notice 116 of 1934) and applying its provisions to the property of the Chobe Concessions (Bechuanaland) Ltd. at Serondelas.

Proclamation No. 4 of 31.1.1946, amending the Nurses and Midwives Proclamation 1945 by deleting the definition of Director of Medical Services and substituting the word "Chairman".

Work is continuing on the draft of a comprehensive Public Health Proclamation. The frequent urgent demands of epidemic disease control have delayed and hampered consecutive effort by the Medical Officer of Health but it is hoped that the draft Proclamation will be submitted during 1947.

SECTION 11 - PUBLIC HEALTH

10. In presenting the first annual report since the wartime restrictions as to size have been withdrawn, it is desirable to give some general details regarding the Bechuanaland Protectorate which set out the background against which the public health problems of the Territory must be considered.

11. The Protectorate covers an area of 275,000 square miles and the preliminary 1946 census returns show a total population of approximately 280,000. In the north western portion of the Territory the watershed from the Angola highlands drains via the Okovango River into an inland delta swamp area covering approximately 10,000 square miles. The water level in the swamp and its distribution is determined by the size of the seasonal flood from the Angola watershed. The north eastern boundary of the Territory is defined by the Chobe River communicating with the Zambesi River. In this well-watered north eastern and north western area - the Ngamiland and Chobe District - malaria is hyperendemic. Sleeping sickness and plague are endemic and biological tests have shown that yellow fever has occurred as far south as 20° of latitude. The remainder of the

Territory, however has scanty permanent surface water and is largely dependent on a seasonal rainfall averaging eighteen inches per annum and distributed mainly over the period October to April. The domestic water supply is derived from village wells, surface dams and tribal boreholes.

12. The population is concentrated in large villages where permanent water is relatively easily available The tribal lands and cattle posts are situated peripherally to the main villages often at distances of twenty miles or more from the central village. There is considerable seasonal movement to and from these central villages to the lands and cattle posts in connection with crop production and reaping, and with animal husbandry. Accordingly, while for short periods during the year there are heavy concentrations of population at the centres, for a considerable portion of the year the population is widely scattered throughout the districts in small and not easily accessible groups There is free inter-communication and movement between these small family groups where the people reside in semi-permanent mud and thatch huts.

13. From the point of view of food production the Ngamiland and Chobe district is normally self supporting. Two crops of grain are grown; one as the floods recede and the other as rainfall allows. In addition, game is plentiful and the population fringing the swamps and rivers can obtain a supplement of fish to add to their diet. But the difficulty of communications and the prohibitive cost of transporting grain over long distances make it impracticable to export any surplus grain to the rest of the Territory

14. The southern and arid portion of the Territory has to rely almost exclusively on the seasonal rainfall for the production of staple grain crops. Bad seasons are more in evidence than good seasons and it is essential to import grain and other food stuffs yearly to maintain supplies. In addition to the rainfall factor, the migration of male adults to the Union on contract to labour organisations has caused the burden of agricultural work to fall more and more heavily on the female population and on the youths and elderly males. Recent sociological research has shown that this has resulted in a considerable falling off in the efficiency of crop production as the normal domestic duties of those remaining behind are being increased beyond their capacity.

15. Stock raising is the main industry but cattle, sheep and goats are viewed in the light of possessions rather than as a major contribution to the food supply The large centres of population do not allow of extensive grazing of stock and the cattle posts are situated away from the centres in the areas where the grazing is plentiful. The milk yield of such stock is low and seasonal, depending on the rainfall and the pasture available. Therefore milk is available as an addition to the diet for short periods during the year only.

16. Accordingly, malnutrition is an important factor in determining the disease pattern in the Territory, particularly when linked with the high incidence of sero-positive syphilis. In the north chronic malaria adds its contribution to the general low resistance against disease.

17. As a result, employment for cash wages is now an essential if the family food supply is to be maintained. Further, the influence of European civilisation has produced a number of essentials for the diet that formerly were unknown or considered to be luxuries. There is relatively little local employment and therefore those desirous of earning cash wages are forced to proceed to the industrial and mining areas. In the main this is effected through the medium of labour agencies, but increasing numbers are moving on their own initiative to the large towns in the Union and Southern Rhodesia where high wages are to be obtained. This has disrupted the family life in the Native Reserves to a considerable extent and the long absences from the home have a very adverse effect on the standard of morality.

18. The preliminary 1946 census figures for the European population totalled 2,325 persons. This group consists of civil servants, farmers, traders and those connected with mining interests. There are five blocks of European settlement - Lobatsi, Gaberones, Tuli, Tati and Ghanzi. There are two small European Townships on the railway line at Lobatsi and Francistown. The other township "local areas" as scheduled in the Bechuanaland Protectorate Sanitary Regulations are all situated in Native Reserves where the land cannot be alienated. There are as yet no town management organisations, but legislation to establish town planning and town management boards is being drafted.

COMMUNICABLE DISEASES:

TUBERCULOSIS:

19. The total number of cases of human tuberculosis reported during 1946 shows an increase over the previous year. However, such statistics as have been obtained bear no relation to the real incidence of the disease in the Territory. Medical Officers and Medical Missionaries working in the districts are unanimous in their opinion that the disease has assumed menacing proportions.

20. At Annexure "A" is an analysis of cases of tuberculosis notified during 1946. The large preponderance of males is in considerable measure due to the number of military pensioners suffering from tuberculosis. This also explains the comparatively high incidence at Lobatsi where all returning soldiers have been examined and classified before proceeding to their tribal area.

21. Control of the disease and its treatment must be based on accurate information regarding the incidence distribution and the main sources of infection. Only when factual information is available can realistic measures be formulated to tackle this urgent problem.

22. Provision of adequate x-ray facilities for diagnosis at Lobatsi, Serowe and Maun hospitals has now been made. Shelters for the accommodation of army pensioners suffering from tuberculosis have been erected at Lobatsi, Molepolole and Serowe. Treatment by means

of artificial pneumothorax has been available at Lobatsi for over a year. These measures are minimal, however, and must only be considered as preliminaries to an adequately based and organised campaign to be launched as soon as funds can be made available.

23. In co-operation with the Director of Livestock and Agricultural Services and the Principal Veterinary Officer the dairy herd supplying milk to the Lobatsi hospital was tuberculin tested during the year. One hundred and twenty-five cows were tested and all animals proved to be negative. This, taken in conjunction with the post mortem reports over the past fifteen years on Protectorate cattle slaughtered at the Johannesburg abattoirs has given rise to the suggestion that the incidence of bovine tuberculosis may be low, and this is supported by the fact that of 346 cattle slaughtered at the Lobatsi abattoir during 1946, none were found to be suffering from tuberculosis.

24. However, these facts must be reviewed in the light of the following

(i) The herd tested consists of a relatively small number of dairy cattle from one area where the standard of animal husbandry is good;

(ii) Cattle for export must be up to embargo weight before being accepted and it is unlikely that cattle suffering from bovine tuberculosis will reach the necessary weight standard. This also applies in a smaller measure to cattle slaughtered locally.

25. A tuberculosis survey of cattle in the Native Reserves living under conditions of poor husbandry and frequent poverty is essential before any categorical statement can be made regarding the incidence of bovine tuberculosis. This investigation would form an integral part of any tuberculosis survey conducted in the Territory.

VENEREAL DISEASE:

26. Serological tests carried out at various centres during the past ten years have shown that the incidence of sero-positive syphilis amongst unselected hospital patients has varied between 30% and 35% of positives. A group of 377 out-patients Kahn tested recently at Mahalapye showed that 64% were sero-positive.

27. Although tertiary manifestations of the disease are comparatively few when considering the percentage of sero-positives amongst the population, the incidence of chronic ill health resulting from latent syphilis and the concomitant lowering of resistance must inevitably affect the mortality rates from other diseases.

28. Venereal disease in the Territory is essentially a sociological problem. Economic pressure is breaking up the family group basis of the tribal system. Large numbers of young men leave the Protectorate each year to work in neighbouring territories under contract.

The necessity to earn cash wages to buy food and to pay for what were formerly considered to be luxuries but are now regarded as essentials, is the motive power behind this migration of labour. The men folk are thus separated from their families for long periods and as a result there is considerable laxity in the standard of morals. In addition, the men often return to their homes with an infection which is passed on to other members of the community.

29. This presents only one aspect of the situation. The more serious aspect is that of the almost complete absence of any standard of morality which will safeguard not only the individual but the community as a whole Promiscuity is rife and although no statistics are available, the illegitimate birth rate must be extremely high in proportion to the legitimate birth rate.

30. Until the economic status of the country is such that conditions of employment will support settled communities living a family life, the problem is almost insoluble. Whatever means of propaganda, health education and treatment are employed, they will be of little avail until this is achieved.

31. The aim of treatment in the past has been to sterilise the lesions and blood of infective patients in an attempt to lessen the spread of the disease. Under the conditions prevailing in the Protectorate patients must attend at a centre for such treatment and while at the centre they are required to make provision for their own food. This food is brought by the patients from their homes and the course of treatment is limited by the length of the period the patients are able to support themselves away from home. It is beyond the means of the Territory to feed these patients while attending for treatment and, as a result, as soon as the lesions are healed and the patients feel better they tend to return home despite advice and warnings. This gives rise to an incomplete cure, relapses within periods of months and the danger of the evolution of an arsenic resistant strain of spirochaete in the Territory.

32. The availability of new and more efficient chemo-therapeutic measures during the past few years has made the outlook on treatment more hopeful, provided that the cost of such treatment can come within the financial means of the Protectorate. A short intensive course of treatment lasting approximately six weeks is aimed at, this course being estimated to cost £1.10.0. per patient. On this basis the total cost per annum to treat those attending for treatment of syphilis is £11,500. This sum would provide only for the treatment of syphilis in those who come forward for treatment. If an estimate of those requiring treatment is based therefore on the level of 30% sero-positives amongst the general population, adequate treatment of the disease throughout the Territory would cost £104,000 for drugs alone. This is far beyond the economic means of the Territory quite apart from being impracticable under present conditions, entailing as it would mass serological investigation, compulsory treatment and segregation during the period of treatment.

33. The problem must be approached on the level of intensive mass education through the medium of the visual approach; the cinema, posters, etc. Meantime,

an intensification of propaganda delivered through the appropriate tribal administration is a first essential. But until the economic problem of the maintenance of the family group has been solved no real advance can be made towards the reduction of the disease to a level comparable with the incidence in highly organised communities.

TRYPANOSOMIASIS:

34. Seven cases of sleeping sickness were notified during the year with two deaths. The first case originated in the swamps near Nokanen and the other six cases occurred amongst the Tsetse Fly Control staff working in the Ngaragha Valley. The infection of the latter group appears to have occurred within the boundary of the fenced area where fly still abounds. It is believed that the infection was brought into the area by a hunter who had broken bounds and had come into contact with a focus of infected fly in the swamps. He in turn infected fly within the fenced area and a small focus of infected fly resulted.

35. Routine blood smears are taken of all Africans working in the fenced area each month and arrangements were made at the end of 1946 to give all workers a prophylactic injection of Pentamadine (M & B 800) on the basis recommended by V. Hoof, Henrard and Peel. (Volume 37, No.4 of the Transactions of the Royal Society of Tropical Medicine and Hygiene).

36. Tsetse Fly control measures in the Maun area are proceeding and work has been commenced on a second game fence with a view to reclamation of an additional 600 square miles, making a total of 1,400 square miles when the scheme has been completed. In conjunction with this the shooting out of game within the fenced area continues and 4,149 head of large and small game were shot out during the year. Game is now seen only rarely in the fenced area and the low percentage of pregnant female tsetse flies taken during recent fly catches indicates that the necessary blood meal is not obtained so readily as formerly.

37. Fly patrols are well established and identification of species is being followed up. It is thought that other species than Glossina Morsitans occur in Ngamiland but no confirmation of this has yet been obtained.

38. Bush clearing has continued but the completion of the second fence is being regarded as of first importance following upon which bush clearing activities will be intensified.

39. During April Professor P. A. Buxton, C.M.G., F.R.S., visited the Territory and made a brief tour of Ngamiland. He reported on the situation and his recommendations have been of the greatest value in reorganisation of the control measures. An Advisory Committee was appointed by His Honour the Resident Commissioner during the year consisting of the Government Secretary as Chairman, with the Principal Veterinary Officer, Medical Officer of Health, Forest Officer, District Commissioner Maun and Tsetse Fly Control Officer as members. The formation of this Committee will go a long way to co-ordinate the various aspects of the control work and will materially

assist the executive officers in the field.

40. The clearing in the Tubu-Tsau area has been maintained and re-settlement is proceeding. No cases of sleeping sickness have been occurring in this area during the year, apart from the one case coming from the swamps on the east of the clearing at Nokanen.

YELLOW FEVER:

41. Following up the human immunity surveys carried out during 1945, a brief aedes survey extending over two months was carried out during January, February and March by Dr. B. de Meillon. This survey was made possible by the courtesy of the Director of the South African Institute for Medical Research who released Dr. de Meillon for this purpose. Results of the survey were negative from the point of view of establishing the presence of jungle yellow fever. At Kasane three different groups of wild caught mosquitoes, each group consisting of mosquitoes of the same species, were inoculated intracerebrally into mice. No virus was isolated. Sera obtained from eighteen monkeys in the area surveyed all gave negative Mouse Protection Tests.

42. It was found that S. Luteocephalus was the predominant canopy mosquito and that at ground level by far the most common mosquito both in heavy forest fringing the swamps and in open country was Mansonioides (Africanus and Uniformis). Laboratory experiments have shown that both M. Africanus and M. Uniformis can harbour the virus of yellow fever and can transmit the disease by biting. As far as is known, however, the virus has not been demonstrated in wild caught specimens.

43. Monkeys in the areas surveyed were largely confined to the forest fringing the swamps, but they were by no means purely arboreal in their habits. It is quite common for the monkeys to use pools as watering places which are used in a like fashion by humans. The possibility of a monkey harbouring virus and transmitting it to a per-domestic mosquito vector is therefore no small one.

44. The survey accentuated the complexity of the problem and indicated the necessity of further prolonged and intensive research if it is to be elucidated. There are known vectors of yellow fever there is a potential mammalian forest reservoir and biological tests have shown that yellow fever has occurred as far south as 20° latitude. The situation resembles that in the Sudan prior to the epidemic of yellow fever occurring in the Nuba Mountains. The urgency of the need for further research which will link up with that going on in Northern Rhodesia and other Southern African Territories concerned requires no stress.

45. During 1947 it is proposed to extend the human immunity surveys to define clearly the southern limit of the area where yellow fever has occurred. The primary necessity however is to locate the endemic focus of jungle yellow fever in this area. To do this adequately, a specialised team is required which can be

organised and worked on an inter-territorial basis if the interests of regional control are to be served.

46. During the year the inoculation against yellow fever of all European inhabitants of the Ngamiland and Chobe districts was advised and the bulk of the European population has now been immunised. In addition, all Europeans visiting the Ngamiland and Chobe Districts are advised to submit to inoculation and regulations are being drafted making such inoculation compulsory. All personnel and passengers of aircraft entering or leaving Ngamiland are now required by regulation to be in possession of a valid certificate of inoculation against yellow fever and aircraft leaving the area are required to land at an authorised or sanitary aerodrome for disinsectisation.

PLAGUE.

47. Developments during the year have shown conclusively that plague is now endemic in the Ngamiland area and that epizootics of rodent plague depend on natural recrudescence rather than extensive spread from any one focus.

48. Amongst the rodents, epizootic conditions were present in Ngamiland during the year. The epizootic appears to have originated in the Mohembo - Nokanen area spreading south and south east to Tsau and Sehitwa and then north and north east to Maun and so towards Kachikau. This is not the whole picture, however, and smaller local enzootics have played a considerable part in the occurrence of human plague.

49. During February outbreaks of human plague occurred at Nokanen, Tsau and Makalamabedi. There were twenty-two cases reported accounting for sixteen known deaths. The outbreaks at Tsau and Nokanen are thought to be the result of a carry-over from the epidemic of 1945 in this area which had apparently terminated in December of that year. The source of the Makalamabedi outbreak, resulting in ten cases of the disease, was a member of a road gang working on an isolated stretch of the Kanyo - Maun road. This man trekked home to Makalamabedi when he took ill and a further nine cases occurred amongst direct contacts. In this instance it appears to be obvious that this man contracted his infection while working in an enzootic area and that, having contracted his disease from a rodent source, he passed on the infection to others through the medium of a flea vector or by direct contagion.

50. There were further outbreaks during September - October at Tsau, Sehitwa and Shorobe and during December at Nokanen. There were forty-six cases reported in these areas resulting in forty-one known deaths. During the year therefore there were reported sixty-eight cases of human plague with fifty-seven deaths, giving a rate of mortality of 83.8%.

51. During the February outbreak, two fleas collected in the Tsau area and forwarded to the South African Institute for Medical Research gave positive P.Pestis on bacteriological investigation.

52. Control of flea infestation in huts by the use of D.D.T. in talc was initiated on a large scale during the year, following on experimental work carried out in March. Experiment had shown that ½ lb. of 10% D.D.T. in talc or 1 lb. of 5% strength gave the necessary concentration on the floor of the average African hut to control flea infestation. On this basis, and commencing in September, the floors of all African huts at the population centres in the endemic area were dusted with 5% D.D.T. in talc at least twice during the period of six months from that date.

53. Flea counts have been continued as far as possible to evaluate this mass distribution of D.D.T. but as yet it is too early to comment on the results and much further work is needed.

54. Other control measures have consisted of the destruction, by cyanogas and poisoned grain, of veldt rodents in burrows and trees peripheral to the huts in the larger centres of population.

55. In villages where cases of human plague occurred, all huts were cyanogassed and treated with D.D.T. and all peripheral burrows treated likewise.

56. The actual cases were given 50 to 100 c.c's of plague anti-serum daily and M & B 760 (Sulfathiazol) by mouth, according to weight. Immediate contacts were quarantined and inoculated with live avirulent plague vaccine and also given plague anti-serum daily during the incubation period. Where the cases were scattered in a thickly populated area, the population at risk were also inoculated with the live avirulent vaccine.

57. The endemic plague area covers many thousands of square miles and the tribes inhabiting the area are very primitive. Communications are poor and notification of outbreaks of plague are received mainly by devious and often unreliable channels. In many cases the epidemic is well advanced or, in isolated areas, has burnt itself out by the time the Health Staff arrived. Concealment of deaths and of illness is common practice.

58. Reliance must be placed therefore on large scale control measures and on continued observations of the activity of the rodent population. Rodent inspectors are continually on the move in the districts, where test strips have been laid out at strategic points. By means of these test strips a "sample" of rodent activity in each area can be obtained. Huts and other dwellings are treated from time to time with cyanogas and the degree of infestation by domestic rodents in any one area so estimated. The degree of flea infestation of huts is estimated by making flea counts at regular intervals.

59. The control of flea infestation by D.D.T. in talc is the most promising of the methods used to prevent human plague. Preliminary work has shown that the dusting of the floors of huts with D.D.T. in talc does undoubtedly keep down the flea infestation but how far this measure can be used as a means of controlling the transmission of plague from rodent to human is not yet clear.

MALARIA:

60. Abnormally heavy rains occurred in March 1946 and there was a sharp increase in mosquito breeding. Anti-larval and, where necessary, anti-adult measures were taken at all large centres of population at risk, and epidemic conditions did not arise.

61. The drought conditions prevailing towards the end of 1946 were reflected in the low incidence of seasonal malaria for the October - December period. Throughout the year 1,202 cases of malaria were notified with one death.

62. Dr. de Meillon of the South African Institute for Medical Research in conjunction with his aedes survey made a brief anopheline survey and submitted a valuable report. In the Ngamiland and Chobe swamp areas A.funestus and A.gambiae are the vectors. In the other endemic areas A.gambiae is the only vector and therefore seasonal control measures only are warranted.

63. Anti-adult and anti-larval control measures were continued at Maun throughout the year. As supplies of D.D.T. became available on the open market arrangements were made to commence operations with D.D.T. during October. Apart from control huts, which were untreated, all huts and houses in Maun were sprayed with 5% D.D.T. in Kerosene during that month. Mosquito catches are being made regularly in the control huts and the treated huts, and records kept which will give an indication of the efficacy of the measures taken. Anti-larval measures are being suspended meantime, pending the observation of the results of the control of adult mosquitoes with D.D.T.

SMALLPOX:

64. During the period June - December cases of modified smallpox occurred in widely separated areas in the Territory. A total of 158 cases was reported and there was only one death from the disease. This fatal case was reported some weeks after it had occurred in an isolated area, and the actual case was not seen by a member of the Health staff.

65. Great difficulty in exercising control of the disease was experienced. The cases were mainly ambulant and the mildness of the disease caused the African population to be apathetic and disinterested in its control. 28,961 vaccinations were performed during this period. This relatively small total, however, does not reflect the true picture. Much time was spent and long distances were covered in performing these vaccinations but the apathy of the general mass of the people resulted in small numbers of persons presenting themselves at the vaccination centres at the scheduled time. If schedules were to be maintained it meant that delay at any one centre would disrupt the organisation of the tour. The difficulty was met by leaving African members of the Health staff at the various centres to complete the work in that area, but the response continued to be poor.

66. In addition, the lack of rain and the poor crop

prospects had scattered the bulk of the population in small groups to the cattle posts where more food was available, and the resulting diffusion of population made adequate control of movement virtually impossible.

67. Great credit is due to the Medical Officer of Health, Medical Officers and the Health staff for the energetic way in which they have tackled the problem in the face of the numerous difficulties the situation presented.

68. Labour recruiting for mine work in the Union was dislocated considerably. Two cases of smallpox occurred in the Union amongst mine labourers recruited in the Territory. By arrangement with the Union Public Health Department and the Native Recruiting Corporation Ltd., vaccination of all recruits on attestation, and before departure for the Union, has been laid down as a permanent measure.

AMOEBIASIS:

69. Early in the year there was an epidemic of amoebiasis in the Kanye District and three European and forty-five African cases were reported, of which thirty-six were reported during March and April. Investigation led to the conclusion that the epidemic originated from returned soldiers who had contracted the disease while serving in the Middle East. The actual mode of transmission was not traced, but labourers working in the vegetable plot at the irrigation scheme were found to be infected. Treatment of those infected was instituted at once and all vegetables from the plot were treated before distribution. The number of new cases declined during April and May and there were no cases reported during June and July. With the onset of warmer weather sporadic cases were reported until November, but there had been no further indication of epidemic spread.

SECTION 111 - VITAL STATISTICS

70. According to the census of 1946 the total population of the Territory was approximately 280,000. Vital statistics in respect of the Native population are not available.

Total European population (1946 Census)	2,325
Total European births	79
Total European deaths	12
Birth rate per 1000	33.97
Death rate per 1000	5.16
Infant mortality	1 death

Table showing causes of deaths:

Infectious diseases	1
General diseases	3
Nervous system	1
Circulatory System	4
Respiratory System	1
Old Age	1
Diseases of Infancy	1
	12

SECTION IV - HYGIENE AND SANITATION

WATER:

71. The development of adequate supplies of pure water for domestic use in the Territory is of first importance from the public health point of view. This applies particularly to the Government camps which should give a lead and set standards that can be adopted at non-official and tribal centres.

72. In the hottest and driest areas the need for water is greatest and it is at these centres where supplies are most inadequate. At two important centres, Francistown and Mahalapye the water supply fails every year during the hottest months and the frustration and anxiety that ensues has a very adverse effect indeed on the efficiency and contentment of those entrusted with the administration in these difficult areas.

73. During the past ten years considerable work has been done towards improving tribal water supplies by putting down boreholes and the construction of surface dams. The quantity of water available has improved as a result but the quality leaves much to be desired. Fencing of borehole areas, the protection of wells from surface pollution and means of purifying conservation water used for domestic purposes are all essentials that require urgent attention.

SANITATION:

74. With one or two exceptions sanitation is primitive or non-existent throughout the Tribal Reserves. The dry climate and bright sunlight do much to neutralise a potentially dangerous situation. The large centres of African population are without any organised system of night soil or rubbish removal and although many Africans have built pit latrines for family use, these structures cannot be considered to be anything approaching a solution of the problem.

75. In the European townships pail latrine systems are in use. Night soil and rubbish removal is carried out by private enterprise on a contract basis. Under existing sanitary regulations the Local Authority is the District Commissioner but these regulations were framed originally to control small and compact communities. The growth of certain of the Township Areas and Government "Camps" has been such during the past ten years that the need for local village or town management bodies is now urgent.

76. The sanitary services in the townships are being reorganised gradually in order to improve their efficiency and so that, when they are taken over by local boards, uniformity can be attained in relation to the needs of the areas concerned.

77. In a country such as the Protectorate which is devoid of sources of natural fertiliser, composting of stercus is undoubtedly warranted and, once established should prove to be a "self balancing" service. Preliminary investigations as to the practicability are being made and some advance in this direction is hoped for in the near future. Once the systems of disposal in use have been standardised and put on a sound basis then development of this nature can be undertaken.

78. Water borne sanitation is the ultimate aim but the large capital cost of comprehensive projects of this nature make it unlikely that it will be practicable for many years to come. It has been urged that all new Government buildings should be equipped with household septic tank units and the cost of such installations in relation to the funds available for building is being investigated.

79. Before concluding the review of the preventive aspect tribute is paid to the Medical Officer of Health and his staff of Health Inspectors for the amount of work that has been done and for the keenness that has directed their efforts. Starting from scratch with minimal staff and funds a great deal of basic work has been done. They have had to face what appeared to be an insuperable task and despite much frustration they have carried on cheerfully and without diminution of effort. An encouraging factor is the co-operation of those sections of the general public who are showing an increasing interest in the numerous health problems of the Territory.

SCHOOL HYGIENE:

80. A considerable amount of basic work has been done on this aspect in co-operation with the Education and Public Works Departments. A number of new school premises have been erected during the year incorporating high standards of lighting and ventilation. One serious lack at practically all schools in the Territory is the absence of a readily available supply of pure drinking water for the scholars. Latrine provision exists at a few schools but sanitation, in the main, is non-existent.

81. A draft detailed hygiene syllabus has been prepared during the year and a few health propaganda lectures delivered at schools. Lack of staff has

however militated against any real development in this direction.

82. Regular medical examinations of scholars has not been possible during the war years. Once an adequate establishment of Medical Officers has been achieved then this most important work will be resumed.

HOUSING:

83. A Housing Committee was appointed by His Honour the Resident Commissioner during the year to draw up plans for official houses and to make recommendations regarding standard types of housing most suitable to the needs of the Territory. Plans embodying the best available standards of lighting, ventilation and sanitation within the limits of funds provided were drawn up and submitted. One feature of the new type plans is the provision of better quarters for African servants including ablution and latrine facilities.

84. In December 1946 an African Housing Committee was also appointed by His Honour to advise on the construction of planning of quarters for African Government employees. Standard type quarters are being drawn up and a building programme extending over a number of years, which will provide better African quarters, is envisaged.

TOWN PLANNING:

85. In view of the development anticipated in the Territory town planning committees have been appointed for each Government centre to make recommendations regarding siting, general lay out and provision for future extensions. The committees consist of Administrative, Medical and Public Works Department Officers and recommendations are to be submitted to a central planning board for scrutiny and approval. This wise move in the interests of long term development should eliminate many difficulties and assist co-operation between the departments concerned.

BUILDING PLANS:

86. Private interests in the Territory have been asked to submit all plans of buildings to Headquarters for examination by the Public Works Department and Medical Department. There has been a large degree of co-operation shown in this direction which has materially assisted in the establishment of new buildings planned on sound constructional and public health lines.

HOTELS:

87. Regular inspection of hotel premises has been carried out by the Medical Officer of Health and his staff during the year, and there have been notable advances made. The construction of two new hotels at Lobatsi and Palapye to replace existing old and insanitary premises is under way and both hotels should

[illegible] development in this direction.

52. [illegible] of scholars has not been [illegible] the war [illegible]. Once an adequate establishment of Medical Office [illegible] has been achieved this [illegible] important work will be resumed.

FUNDING

53. [illegible] by his [illegible] during [illegible] year to [illegible] recommended the [illegible] most suitable [illegible] embodying the best [illegible] ventilation [illegible] the limits of funds provided were [illegible] adopted. The [illegible] of the new type [illegible] the provision [illegible] better quarters for African [illegible] lighting and [illegible] facilities.

[illegible] A African Housing Committee [illegible] months [illegible] labour [illegible] services on the [illegible] housing [illegible] for African Government employees [illegible] are being drawn up and a building [illegible] number of years, which will [illegible] African members [illegible] ed.

[illegible]

54. [illegible] established [illegible] Medical and Public Works Departments [illegible] recommendations [illegible] to be submitted [illegible] planning board for [illegible] and approval. [illegible] move in the interests of long term development [illegible] eliminate many difficulties [illegible] between the departments [illegible].

FUNDING LAWS

55. Private [illegible] in the Territory have been [illegible] submit [illegible] plans [illegible] allowance to Headquarters for [illegible] in [illegible] the Government and Native [illegible] The [illegible] a large degree of [illegible] shown in [illegible] building [illegible] of the [illegible] building [illegible] Medical and [illegible] Public [illegible]

[illegible]

56. Funds [illegible] Medical [illegible] Public Works [illegible] housing [illegible] African [illegible] Government [illegible] housing [illegible] African [illegible] Government [illegible] Labour [illegible] Pension [illegible] insurance premiums [illegible] which should [illegible]

be completed during the first half of 1947. The Maun Hotel has been greatly improved and accommodation increased by the addition of a new wing. Improvements have also been carried out to hotels at Francistown and Mahalapye. Plans of all new structures have been scrutinised by the Medical Officer of Health and advice given so that they conform to accepted standards of hygiene and sanitation as applied to local conditions.

INSPECTION OF MEAT AND FOODS:

88. Meat inspection by a qualified Health Inspector has been instituted at the Lobatsi Government abattoir. The abattoir regulations were applied to the Lobatsi local area in November 1943 but it has only been possible to enforce these regulations during the year under review, after a second Health Inspector had been appointed to the establishment and posted to Lobatsi.

89. It is anticipated that a second Government abattoir will be built at Francistown during 1947 when regular meat inspection will be instituted in this local area.

90. At other centres slaughter poles have been inspected and advice given on improvements of design and methods of disposal of offal. An encouraging sign is the interest and co-operation shown by certain African butchers in the improvement of their premises.

91. Butcher shops in the Territory have been very primitive but during the past few years considerable improvements in design have been effected. Plans of all new shops have been submitted to the Department for approval, and advice has been given regarding improvement of existing structures.

92. Recommendations have been made that Health Inspectors should be appointed "Inspectors" in terms of the Bechuanaland Protectorate Dairies and Dairy Produce Regulations (1941) in order to assist with the development of a pure milk supply. As all Health Inspectors appointed are required to be in possession of the Royal Sanitary Institute's Meat and Other Foods Certificate in addition to the basic Royal Sanitary Institute qualification, it is felt that this step, if approved, will be of material assistance in this direction.

MATERNITY AND CHILD WELFARE:

93. In addition to the Maternity Service provided at Hospitals there are three Government-subsidised Maternity Centres - the London Missionary Society Maternity Centres at Maun and Serowe, and the Hermannsburg Lutheran Mission Maternity Centre at Ramoutsa.

94. The London Missionary Society Centre at Serowe has been in operation for fifteen years under the direction of Miss E. Haile, M.B.E. This Centre took over the systematic training of pupil midwives on behalf of Government during 1944. Unfortunately,

early in 1946 urgent private affairs made it imperative for Miss Haile to proceed on long leave overseas and the London Mission Society found it impossible to effect her replacement. Eventually it was learned with regret that it was necessary for Miss Haile to make a prolonged stay in England and her resignation took effect during January 1947. The flourishing organisation built up by Miss Haile has done magnificent work in Serowe and her services there are greatly missed.

95. In view of this temporary closing down of the Maternity Centre the pupil midwives were transferred to the Government Hospital where temporary accommodation has been made available for a maternity unit in charge of an European Hospital Sister. This work is now being carried on at the Hospital and the training of pupil midwives is being continued there pending a decision on the reopening of the London Mission Maternity Centre.

96. The London Mission Society Maternity Centre at Maun which was opened in July 1945, has been extended during the year by the addition of essential outbuildings. Work has been completed on the main block and the bed capacity is now six. Accommodation can be extended to twelve beds by making use of verandah space. This Centre received a small capital grant-in-aid towards the cost of buildings and now receives an annual subsidy of £100 p.a. towards the recurrent expenditure.

97. A feature of the year's work shown in the annual reports from the districts has been the increase in the attendances at the ante-natal clinics, with a resultant increase in the number of women who enter hospitals and centres for their confinements. This is a big advance and indicates that much of the prejudice against confinement away from the home is being dispelled. The benefits of the good start in life for the infant and the proper care of the mother during this critical period are being increasingly appreciated.

SECTION V - HOSPITALS AND DISPENSARIES

98. Despite the staff problems encountered during the year, the volume of curative work has again increased. The following are the figures for out-patient and in-patient attendances as compared with 1945:

	1945	1946
OUT-PATIENTS:		
First attendances	40,480	48,228
Subsequent attendances	164,018	161,832
TOTAL:	204,498	210,060
IN-PATIENTS:		
Total cases treated:	4,562	4,795

Hospital accommodation has not been increased during 1946 but shelters designed for the hospital treatment of patients suffering from tuberculosis have been erected and will be equipped and put into operation during 1947.

99. Improvements to Maun hospital have been effected, with funds made available from the Colonial Development and Welfare Fund. Plans have been drawn up and materials ordered by the Public Works Department and the work has been done by local builders working under the supervision of the Medical Officer. In this way it has been possible to effect urgently needed minor improvements which could not be undertaken by the Public Works departmental labour owing to pressure of urgent major works elsewhere.

100. At Francistown a Nurses' Home has been completed for the housing of African Staff Nurses. The Home has been planned so that it can be extended later to house all African female nursing staff.

101. An urgent need at all hospitals is improved and adequate accommodation for African nurses. At present the probationer nurses are housed in cramped and unsuitable quarters and this reacts very unfavourably on their efficiency and the standard of personal hygiene that they are expected to maintain. Provision has been requested for funds to erect adequate quarters at all hospitals during 1947-1948.

102. There are two dispensary stations - Mahalapye and Gaberones - to which Medical Officers are posted. In the past all Medical Officers posted to dispensary stations have complained of the inadequacy of the facilities afforded to practise medicine on a reasonable basis and according to modern standards.

103. During the year the dispensary at Mahalapye has been converted into administrative offices and the nucleus of a Health Centre with provision for eight beds has been completed under a grant from the Colonial Development and Welfare Fund. The Centre has been designed to make inpatient accommodation available for maternity cases and for those requiring treatment for minor and emergency illness. When the wards have been equipped it is proposed to post locally trained African nurses to the Centre as they become available. An ambulance has been provided for the Centre and cases requiring treatment not available at Mahalapye will be evacuated to the central hospital at Serowe.

104. It is planned to replace the dispensary at Gaberones with a unit similar to that at Mahalapye and when this has been done all stations to which a Medical Officer may be posted will have some accommodation for inpatients. This will go a long way to give the facilities desired and to allow Medical Officers the opportunity to carry out their duties under conditions that will stimulate interest and allow of more adequate investigation of the medical problems with which they are constantly being confronted.

105. A subdispensary was opened at Palapye during the year, supervised from Serowe. For part of the time an African Dispenser has been posted there, working under the direction of the Medical Officer, Serowe, who visits Palapye several times weekly. This dispensary in some measure caters for the needs of the large population group on the east of the railway line in the Palapye area. Unfortunately, the shortage of trained African staff has meant the withdrawal at frequent intervals of the Dispenser stationed there for relief duty elsewhere

and the dispensary cannot as yet be put into full operation.

106. The Tsau Health Centre continued to give good service throughout the year and the measure of its success has been the increased confidence in the Centre that is being shown by the primitive peoples inhabiting the area. Regular routine visits have been made by the Health Assistant from Tsau to the Sehitwa and Nokanen villages. The resignation of the Senior Health Assistant in charge of the Centre was a great loss. This African held the Medical Aid Diploma of Fort Hare African College and had been at Tsau since the Centre was opened during the plague epidemic in November 1944. At that time the local population had suffered severely from outbreaks of sleeping sickness and plague. Despite treatment, the death rate had been high and the European doctor was regarded with superstition and dread. The Senior Health Assistant, by his sincerity and application to duty, has won back the confidence of the people and has done much to re-establish the medical work in that district. He has been replaced by a Health Assistant who has received his training in the Protectorate and whose record has shown him to be a responsible man well fitted to carry on the tradition of service established by his predecessor.

107. Where the staff position has allowed, district work has been expanded. The main expansion in this direction has been from Mahalapye where outpatient clinics have been held at regular intervals at Shoshong, Kalamare and at posts in the Tuli Block. Towards the end of the year the isolated areas at Kalkfontein, Nojane and the Kgalagadi were visited by the Senior Health Assistant. Courses of antisyphilitic treatment were given over such periods as time and the difficulty of supply permitted. At the same time a vaccination campaign was carried on. This work is to be followed up by a visit from the Medical Officer of the district and an African Medical Orderly left in the area to complete courses of treatment laid down by the Medical Officer.

NURSE TRAINING:

108. Government and Mission Hospitals have carried on with the training of probationer nurses throughout the year. Examinations were held in July by the Medical Department and four nurses passed the final general medical and surgical examination and three midwives passed the final midwifery examination. There are now three locally trained African nurses who have passed both general nursing and midwifery examinations and these girls have all been posted as nurses to Government or Mission Hospitals.

109. During the year the four Government hospitals and three mission hospitals conducted courses of training. Eighteen nurses were entered for the examinations from five centres. Of these fourteen passed the examinations, three with distinction.

110. That training has been continued at all during the present shortage of European trained staff has been entirely due to the keenness of the Matrons and Sisters

of the hospitals concerned. Much off duty time has been sacrificed and work in connection with test examinations and correction of papers has been done at night, after long hours of general duty. The disappointments have been many and the wastage of probationer staff, due to unsuitability or resignations, has been very high. Such results as have been obtained are a tribute to the perseverance and patience of those of the European Nursing Staff who have continued their efforts under the most difficult circumstances.

111. Reorganisation of the nurse training is being planned to improve facilities and to raise the standard. Nominations have been sent forward to the High Commission Territories Nursing Council in terms of Section 10 (2) (f) and (g) of Proclamation No. 15 of 1945 for membership of the Bechuanaland Protectorate Executive Nursing Committee. The first duty of this Committee will be to revise the curriculum for general nursing and midwifery training, to co-ordinate the work of the various bodies at present conducting courses of training, and to conduct examinations for the local Bechuanaland Protectorate Nursing and Midwifery Certificate.

112. Training of nurses at the Government hospitals will eventually be concentrated at Lobatsi. Provision has been requested in the 1947-1948 estimates for the building of a pupil nurses lecture room and common room, and provision already exists for the appointment of a Sister Tutor. As locally trained nursing staff becomes available, the other Government hospitals will be staffed by trained nurses and the pupil nurses concentrated at Lobatsi. During 1946 provision for the employment of ward maids was authorised, and this will allow probationer nurses more time for nursing duties and for periods of practical instruction in the wards.

113. Midwifery training for the greater part of the year has been carried on at Serowe hospital as the London Missionary Society Maternity Centre at Serowe has closed down when the Sister in Charge proceeded on urgent leave without a replacement being effected. Training has also been carried out at the Maun London Missionary Society Maternity Centre within the limits of the probationer staff available. Suitable local candidates for training at Maun are very few, owing to the local prejudice against young unmarried women undertaking this type of work.

PRISONS AND ASYLUMS:

114. Prisons were inspected regularly throughout the year. The general health of the prisoners was good and there were no deaths. There were no releases on account of ill health.

115. The state of the prison buildings leaves much to be desired. Without exception the buildings are old, inadequately ventilated and overcrowding is common. During the year some minor improvements were commenced at the Gaberones gaol, but in all instances rebuilding and extensions are required.

116. With the aid of funds from the Colonial Development and Welfare Fund a Mental Observation Home was built at Lobatsi. In the past those suffering from mental

disorder who required institutional treatment were accommodated in asylums in the Union of South Africa. But the accommodation in the Union has become so overtaxed that for some time it has been found impossible to obtain accommodation for any but lunatics detained at the High Commissioner's pleasure.

117. As a result it was imperative to provide accommodation in the Territory, particularly in view of the number of African Pioneer Corps men returning from the Middle East suffering from insanity. Temporary accommodation was obtained by taking over the Lobatsi gaol as a detention unit. The Mental Home will be ready early in 1947 when the patients will be transferred from the gaol to the new building.

118. The Union Government has agreed to make accommodation available for lunatics from the High Commission Territories when their post-war building plans have been completed. The Mental Observation home at Lobatsi will then be used to detain under observation those suffering from mental disorder until such time as they can be sent forward to a Union Institution for treatment.

119. FINANCE:

Total Revenue from Hospital and Dispensary Fees		£3,211. 1. 11.
Total Ordinary Expenditure of Medical Department:		
Personal Emoluments	£22,058.10.8.	
Other Charges	£28,805 7.6.	
		£50,863. 18. 2.
Total ordinary revenue of Bechuanaland Protectorate		£360,285. 4. 5.
Proportion of ordinary medical expenditure to ordinary revenue of Protectorate		11.32%

120. Grants from Colonial Development and Welfare Fund totalling £8,400 were approved during the year for capital and other expenditure on the expansion of the Medical and Health Services.

121. In concluding this report it is with pleasure that I place on record the loyal service and co-operation of the staff of the Department. The difficulties and disappointments have been many but such measure of advance as may have been achieved is entirely due to a singleness of purpose in the highest tradition of service.

D.J.M. MACKENZIE

DIRECTOR OF MEDICAL SERVICES

Mafeking,
1st May, 1947.

ANNEXURE "A" (Contd)

TUBERCULOSIS - BECHUANALAND PROTECTORATE - 1946 - (AFRICANS)

	JULY				AUG.				SEPT.				OCT.				NOV.				DEC.			
	M.		F.		M.		F.		M.		F.		M.		F.		M.		F.		M.		F.	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
FRANCISTOWN	3		1		14		-		5	1	-		13	1	-		2		-		4		-	
GABERONES	2		-		26		-		2		-		2		-		1		-		1		-	
KANYE	2		1		1		3		3		-		2		2		2		3		-		-	
KAZANGULA	-		-		1		-		1		-		-		-		2		-		-		-	
LOBATSI	19	3	-		11		-		17		-		7	2	-		7	3	-		7		-	
MAHALAPYE	2		-		3		-		3		-		-		-		2		-		2		-	
MAUN	3		-		2		-		-		-		2		-		2		-		-		-	
MOCHUDI	1		-		3		-		3		-		1		-		2		-		1		-	
MOLEPOLOLE	2		3		1		1		8		3		6	1	2		1		3		4		3	
SEFHARE	-		-		2		-		-		-		1		-		1	1	-		2	1	-	
SEROWE	3		-		5		-		3		-		6		-		4	1	-		1		-	
TOTAL:	37	3	4	-	69	-	4	-	45	1	3	-	40	4	4	-	26	5	6	-	22	1	3	-

CASES		DEATHS	
483		19	
MALES	FEMALES	MALES	FEMALES
445	38	18	1

A N N E X U R E "A"

TUBERCULOSIS - BECHUANALAND PROTECTORATE - 1946 - (AFRICANS)

	JAN.				FEB.				MAR.				APR.				MAY.				JUNE.			
	M.		F.		M.		F.		M.		F.		M.		F.		M.		F.		M.		F.	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
FRANCISTOWN	3		-		4		-		1		-		3		-		3		-		11		-	
GABERONES	5		-		3		-		2		-		-		-		11		-		2		-	
KANYE	3		1		2		2		2		-		1		-		4		-		1		1	
KAZANGULA	-		-		-		-		-		-		-		-		-		-		1	1	-	
LOBATSI	18	1	-		26		-		13		-		14		-		5		-		7		-	
MAHALAPYE	-		-		2		-		2		-		6		—		2		-		1		-	
MAUN	1		1		-		1		3		-		-		1		1		-		1		-	
MOCHUDI	-		-		-		-		-		-		-		-		1		-		2		-	
MOLEPOLOLE	-		1		-		-		3		1		2	1	3		3		-		2		2	1
SEFHARE	-		-		-		-		-		-		-		-		-		-		-		-	
SEROWE	4		-		3		-		9		-		3		-		4		-		6	1	-	
TOTAL:	34	1	3	-	40	-	3	-	35	-	1	-	29	1	4	-	34	-	-	-	34	2	3	1

[illegible]

APPENDIX "B"

RETURN OF DISEASES - OUTPATIENTS

FOR THE YEAR 1946

	DISEASES BY SYSTEMS OR GROUPS	MALE	FEMALE
1.	Epidemic, Endemic and Infectious Diseases	5,474	6,978
2.	General Diseases not mentioned above	986	1,933
3.	Affections of the Nervous System and Organs of the Senses	1,272	1,467
4.	Affections of the Circulatory System	388	411
5.	Affections of the Respiratory System	2,155	2,446
6.	Diseases of the Digestive System	3,217	5,550
7.	Diseases of the Genito-urinary System (Non-Venereal)	556	5,474
8.	Puerperal State	-	2,031
9.	Affections of the Skin and Cellular Tissues	1,184	1,487
10.	Diseases of Bones and Organs of Locomotion (other than Tuberculous)	603	613
11.	Malformations	11	10
12.	Diseases of Infancy	87	100
13.	Affections of Old Age	46	54
14.	Affections produced by External Causes	1,505	871
15.	Ill-defined Diseases	210	339
16.	Diseases, the total of which have not caused 10 Deaths	560	197
	TOTALS:	18,254	29,969

APPENDIX "C"

RETURN OF DISEASES AND DEATHS - INPATIENTS

FOR THE YEAR 1946

	Remaining in Hospital, 1945	Yearly Total		Total cases Treated	Remaining in Hospital, 1946
		Admissions	Deaths		
1. Epidemic, Endemic and Infectious Diseases	28	925	52	953	32
2. General Diseases not mentioned above	11	232	12	243	14
3. Affections of the Nervous System and Organs of the Senses	4	221	7	225	4
4. Affections of the Circulatory System	7	120	18	127	4
5. Affections of the Respiratory System	8	475	20	483	15
6. Diseases of the Digestive System	2	382	16	384	4
7. Diseases of the Genito-Urinary System (non-venereal)	9	337	9	346	10
8. Puerperal State	7	720	15	727	16
9. Affections of the Skin and Cellular Tissues	1	185	-	186	5
10. Diseases of Bones and Organs of Locomotion (other than Tuberculous)	4	68	-	72	3
11. Malformations	-	5	-	5	-
12. Diseases of Infancy	1	143	16	144	7
13. Affections of Old Age	-	4	2	4	-
14. Affections produced by External Causes	25	540	13	565	28
15. Ill-defined Diseases	1	44	2	45	2
16. Diseases, the total of which have not caused ten deaths	-	94	-	94	5
TOTAL:	108	4,495	182	4,603	149

A N N E X U R E 'D'

KANYE SCHOOL FEEDING EXPERIMENT

With funds from a Colonial Development and Welfare Fund grant totalling £7,923, a school feeding experiment under the direction of the Medical Research Officer, Dr. B. T. Squires, was conducted at Kanye over a period of two years commencing in April 1944. The feeding experiment was run in conjunction with a tribal irrigation scheme at which vegetables used for the school feeding were grown. Each child attending school at Kanye received four ounces of fresh vegetables ane one ounce of legumes in half a pint of stew on each school day throughout the year. School children resident at Molepolole, fifty miles from Kanye, and living under similar environmental conditions to those at Kanye, were used as controls.

2. The experimental period of feeding was terminated at the end of the 1945 school year. The first four months of 1946 were occupied in the collation and evaluation of data collected during the experiment and in the writing of the report. Printing difficulties have held up the publication of the report but it is anticipated that the report will be submitted during the latter half of 1947.